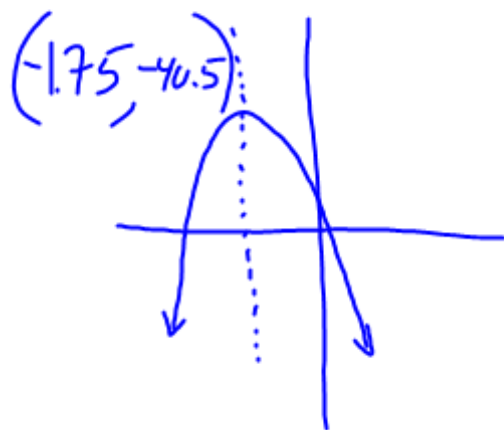


Factored Form (1c)

$$y = -4(2x - 1)(x + 4)$$

$$0 = -4(2x - 1)(x + 4)$$

$$x\text{-int} = \frac{1}{2}$$



$x\text{-coord} = \text{avg. of roots}$

$$\frac{1}{2} + -4 = \frac{-3.5}{2}$$

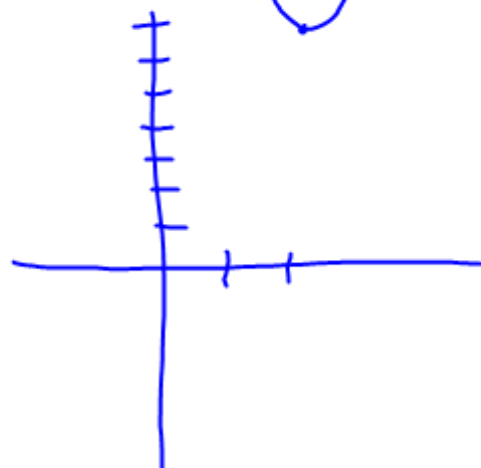
$$x\text{-coord} = -1.75$$

$$y\text{-coord} = -4(-1.75 \cdot 2 - 1)(-1.75 + 4) = -40.5$$

Vertex Form 1c

$$y = 2(x-2)^2 + 7$$

vertex (2, 7)



$$\rightarrow 0 = 2(x-2)^2 + 7$$

-7

-7

$$\frac{-7}{2} = \frac{2(x-2)^2}{2}$$

$$\sqrt{-3.5} = \sqrt{(x-2)^2}$$

$$\text{Non Real} = x-2$$

Factored Form 2 b

$$y = 3(x-3)(x+5)$$

$$ax^2 + bx + c$$

	$x - 3$	
x	x^2	$-3x$
$+5$	$5x$	-15

$$3 \cdot (x^2 + 2x - 15)$$

$$3x^2 + 6x - 45$$

5.1 #24

$$f(0)=5 \quad f(2)=3 \quad f(-1)=0$$

x	y
0	5
2	3
-1	0

$$y = ax^2 + bx + c$$

$$5 = a(0)^2 + b(0) + c$$

$$3 = a(2)^2 + b(2) + c$$

$$0 = a(-1)^2 + b(-1) + c$$

$$\Rightarrow \begin{aligned} 0 + 0 + c &= 5 \\ 4a + 2b + c &= 3 \\ 1a - 1b + c &= 0 \end{aligned}$$

$$\begin{bmatrix} 0 & 0 & 1 \\ 4 & 2 & 1 \\ 1 & -1 & 1 \end{bmatrix} \cdot \begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 5 \\ 3 \\ 0 \end{bmatrix}$$

A X = B


$$A^{-1} \cdot B = \begin{bmatrix} -2 \\ 3 \\ 5 \end{bmatrix}$$

$$y = -2x^2 + 3x + 5$$

Vertex Form 2b

$$y = -3(x+2)^2 + 12$$

$$y = -3 \underline{(x+2)(x+2)} + 12$$

$$y = -3(x^2 + 4x + 4) + 12$$


$$y = -3x^2 - 12x - 12 + 12$$

$$y = -3x^2 - 12x$$

Set 5.4 #36

$$28k^2 + 13k - 6$$

$$1 \cdot 28$$

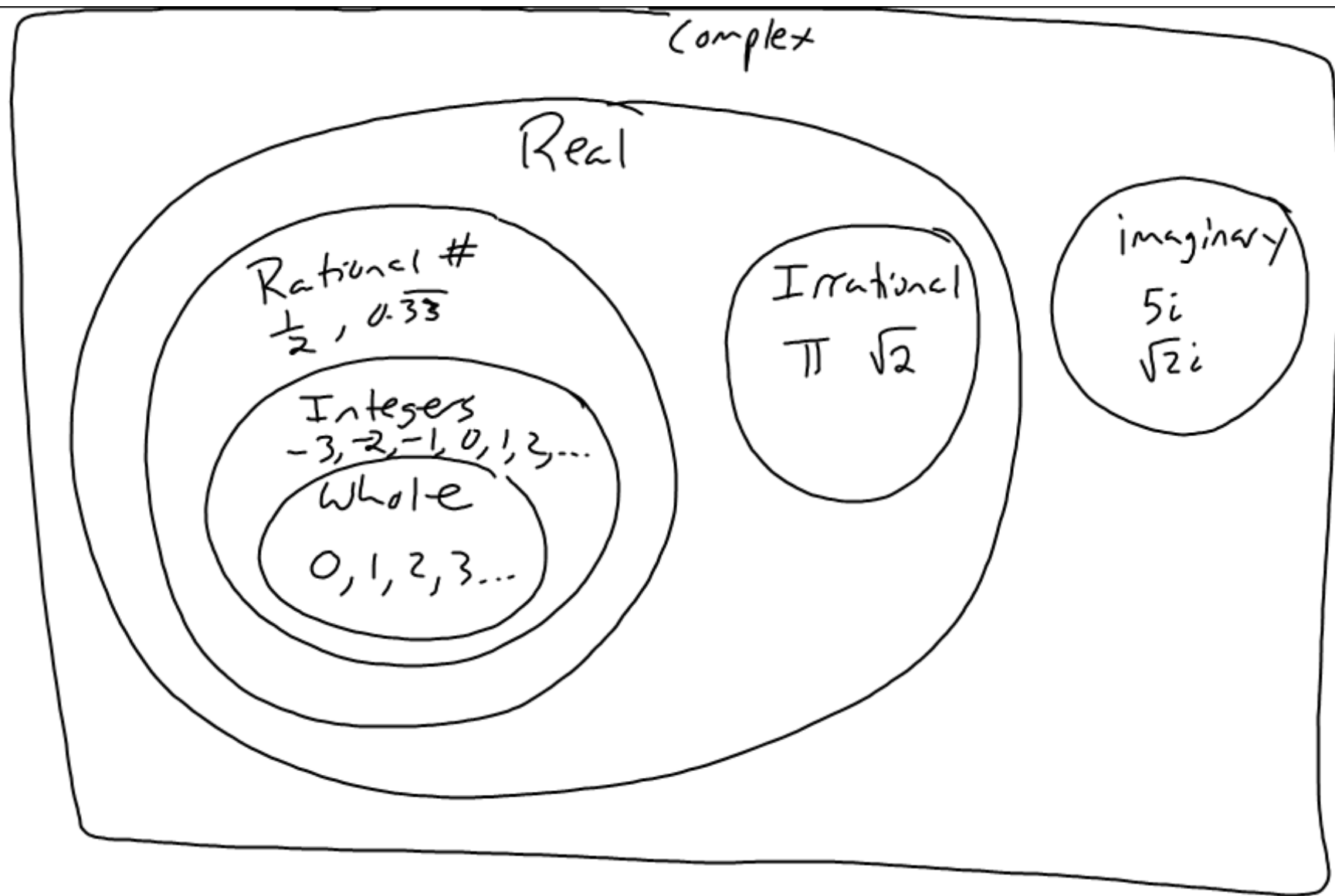
$$2 \cdot 14$$

$$4 \cdot 7$$

$$1 \cdot 6$$

$$2 \cdot 3$$

$$(4x + 3)(7x - 2)$$



Complex Number

$$\begin{array}{cc} a + bi \\ \downarrow \quad \downarrow \\ \text{real} \quad \text{imaginary} \end{array}$$

$$3 + 2i$$

$$6 = 6 + 0i$$

$$5i = 0 + 5i$$

$$x^2 + 1 = 0$$

-1 -1

$$\sqrt{x^2} = -1$$

$$x = \pm \sqrt{-1}$$

Sq. root \rightarrow what times itself
is the number in
Sq. root?

$$\sqrt{4} \rightarrow \begin{array}{l} 2 \cdot 2 \\ -2 \cdot -2 \end{array}$$

imaginary numbers

$$i = \sqrt{-1} \quad i^2 = -1$$

$$\begin{aligned} \sqrt{-4} &= \sqrt{4} \cdot \sqrt{-1} \\ &\quad \downarrow \quad \downarrow \\ &= 2i \end{aligned}$$

$$\begin{aligned} \sqrt{-100} &= \sqrt{100} \cdot \sqrt{-1} \\ &\quad \downarrow \quad \swarrow \\ &= 10i \end{aligned}$$

$$\begin{aligned} \sqrt{-25} &= \sqrt{25} \cdot \sqrt{-1} \\ &\quad \downarrow \quad \swarrow \\ &= 5i \end{aligned}$$

$$\begin{aligned} \sqrt{-7} &= \sqrt{7} \cdot \sqrt{-1} \\ &\quad \downarrow \quad \downarrow \\ &= \sqrt{7}i \end{aligned}$$

$$(\underline{3} + \underline{6i}) + (\underline{2} + \underline{3i}) = \underline{5} + \underline{9i}$$

$$(4 + 3i) - (2 + 1i) = 2 + 2i$$

$$(\underline{5} - \underline{3i}) - (\underline{2} - \underline{4i}) = \underline{3} + i$$

$$6 - (2 + 3i) = 4 - 3i$$

Multiplication

$$(3 + 2i)(4 + 5i)$$

	$3 + 2i$	
4	12	$8i$
$+ 5i$	$15i$	$10i^2$

$$12 + 23i + 10i^2$$

$$12 + 23i + 10(-1)$$

$$12 + 23i - 10$$

$$\boxed{2 + 23i}$$

$$i = \sqrt{-1}$$

$$i^2 = \sqrt{-1}^2 = -1$$

$$i = \sqrt{-1}$$

$$i^2 = -1$$

sect. 5.6
#29-44 ≈ 15 min

$$|2 - 3i| = \sqrt{13}$$

$$|3 + 4i| = 5$$

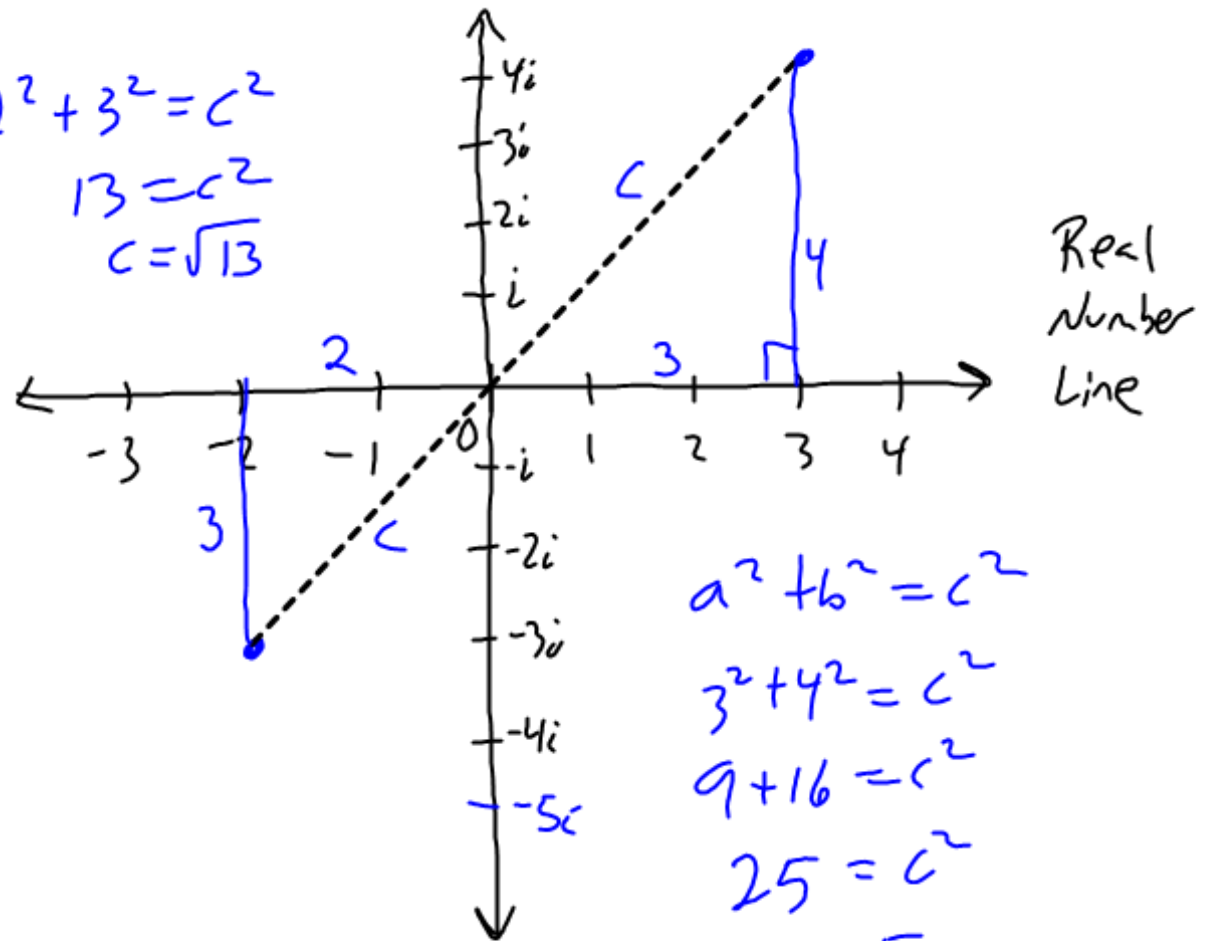
$$|5| = 5$$

$$|-5| = 5$$

$$|5i| = 5$$

$$|-5i| = 5$$

$$\begin{aligned} 2^2 + 3^2 &= c^2 \\ 13 &= c^2 \\ c &= \sqrt{13} \end{aligned}$$



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 3^2 + 4^2 &= c^2 \\ 9 + 16 &= c^2 \\ 25 &= c^2 \\ c &= 5 \end{aligned}$$

Sect. 5.6

#1-5, 19-21, 29-44, 54, 68-70